

Appl. No. (not yet known)

Preliminary Amendment filed 23 December 2004

Title: SPECIMEN HOLDER FOR AN ELECTRON MICROSCOPE, AND  
METHOD FOR REDUCING THERMAL DRIFT IN A MICROSCOPE

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1 Claim 1 (original): A specimen holder for an electron  
2 microscope, comprising a rod-shaped part (2), which is  
3 provided near one end with a tip (3), which tip (3) is  
4 arranged to receive a specimen, the rod-shaped part (2), in  
5 use, extending with at least the tip (3) into the electron  
6 microscope, held by clamping means (5) present in the  
7 electron microscope, wherein first temperature control  
8 means (10) are provided to control the temperature of the  
9 rod-shaped part (2) and/or the clamping means (5), such that  
10 this rod-shaped part (2) and the clamping means (5)  
11 substantially have the same temperature, at least at the  
12 location of their contact surfaces.

1 Claim 2 (original): A specimen holder according to claim 1,  
2 wherein the first temperature control means (10) comprise a  
3 cooling element and/or a heating element.

1 Claim 3 (currently amended): A specimen holder according to  
2 claim 1 ~~or 2~~, wherein second temperature control means are  
3 provided to control the temperature of the tip (3), at least  
4 a part of the tip (3) arranged to receive the specimen, the  
5 second temperature control means comprising cooling means  
6 and/or heating means.

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1 Claim 4 (currently amended): A specimen holder according to  
2 ~~any one of the preceding claims~~ claim 1, wherein the first  
3 temperature control means (10) are provided around at least  
4 a part of the rod-shaped part (2).

1 Claim 5 (original): A specimen holder according to claim 4,  
2 wherein at least a part of the first temperature control  
3 means (10) is arranged near the tip (3) of the specimen  
4 holder (1).

1 Claim 6 (currently amended): A specimen holder according to  
2 ~~any one of the preceding claims~~ claim 1, wherein the rod-  
3 shaped part (2), in use, is held in at least two spaced  
4 apart positions by the clamping means (5), the first  
5 temperature control means (10) being arranged to keep the  
6 rod-shaped part (2), at least the outer surface thereof,  
7 between the holding positions at the same temperature as the  
8 temperature of the clamping means (5).

1 Claim 7 (currently amended): A specimen holder, in  
2 particular according to ~~any one of the preceding~~  
3 ~~claims~~ claim 1, wherein between the tip (3) and the outer  
4 surface of the rod-shaped part (2) a substantially shell-  
5 shaped connecting element (8) is provided, manufactured from  
6 a relatively stiff, impact resistant, thermally insulating  
7 material, openings (9) being provided in the shell.

1 Claim 8 (original): A specimen holder according to claim 7,  
2 wherein the openings (9) of the shell-shaped connecting  
3 element (8) are such that the heat conduction is at least  
4 less than one tenth of a comparable structure without  
5 openings, preferably less than one hundredth.

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1 Claim 9 (currently amended): A specimen holder according to  
2 | claim 7-~~or 8~~, wherein the shell-shaped connecting  
3 element (8) is manufactured from titanium.

1 Claim 10 (currently amended): A specimen holder according to  
2 | ~~any one of the preceding claims~~ claim 1, in which the first  
3 and/or the second temperature control means comprise a  
4 temperature sensor.

1 Claim 11 (original): A specimen holder according to  
2 claim 10, wherein the temperature sensor comprises a thermo  
3 couple (11).

1 Claim 12 (currently amended): A specimen holder according to  
2 | ~~any one of the preceding claims~~ claim 1, wherein the tip (3)  
3 comprises a frame (20) and a platform (24), provided with a  
4 recess (25) to receive the specimen, which platform (24) is  
5 suspended by means of a subframe (22) so as to be tiltable  
6 in the frame (20), which frame (20) and subframe (22) are  
7 manufactured from two different materials having a different  
8 expansion coefficient and are dimensioned and positioned  
9 relative to each other such that expansion or shrinkage of  
10 the frame and the subframe outweigh each other as a result  
11 of temperature changes occurring in the tip (3) during use,  
12 such that a specimen placed on the platform (24) during use  
13 is substantially not displaced.

1 Claim 13 (original): A specimen holder according to  
2 claim 12, wherein the frame (20) is manufactured from  
3 tungsten and the subframe (22) from aluminum.

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1 Claim 14 (currently amended): A specimen holder according to  
2 ~~any one of the preceding claims~~ claim 1, wherein the  
3 rod-shaped part (2) is manufactured from a material which  
4 has a relatively good heat conduction and a relatively low  
5 thermal expansion coefficient and is preferably not  
6 magnetic.

1 Claim 15 (original): An assembly of an electron microscope  
2 and a specimen holder (1), wherein the electron microscope  
3 is provided with clamping means (5) for holding the specimen  
4 holder (1) in the electron microscope, which electron  
5 microscope comprises third temperature control means to keep  
6 the clamping means (5) at a desired temperature and the  
7 specimen holder (1) comprises first temperature control  
8 means (10) to keep at least a part of the specimen  
9 holder (1) being in contact with these clamping means (5)  
10 substantially at the same temperature as the clamping  
11 means (5).

1 Claim 16 (currently amended): A method for reducing thermal  
2 drift in an electron microscope, comprising the following  
3 steps:

4 ——— placing a specimen on the specimen holder (1);  
5 ——— fixing the specimen holder (1) in the electron  
6 microscope in clamping means (5) suitably provided in the  
7 electron microscope;  
8 ——— adapting the temperature of the specimen  
9 holder (1) and/or the clamping means (5), so that both  
10 obtain and keep substantially the same temperature.